

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Nilesh C. Patel

Serial No.: Not yet assigned

Filed: Herewith

For: FLUID COUPLING ASSEMBLY WITH
INTEGRAL RETENTION MECHANISM

August 24, 2006

Costa Mesa, California 92626

PETITION TO MAKE SPECIAL

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sirs:

This Petition to Make Special is being submitted in accordance with 37 CFR §1.102(d) in order to accelerate examination of the above-identified application. Submitted below are items (A) through (D) as required pursuant to MPEP §708.02(VIII):

A. FEE

Submitted with this Petition to Make Special is the fee set forth in 37 CFR §1.17(h).

B. SINGLE INVENTION

In the event that the Office determines that all the claims presented are not obviously directed to a single invention, it is hereby submitted that the Applicants will make an election without traverse as a prerequisite to the grant of special status.

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C. PRE-EXAMINATION SEARCH

Submitted herewith is an International Search Report issued by the United States Patent Office in a corresponding PCT application having claims of the same scope to the claims currently pending in this application. (A copy of the written opinion on the search report is attached.)

D. COPY OF REFERENCES

Submitted herewith is a copy of the following references which were cited in the search report and which are deemed most closely related to the subject matter encompassed by the claims:

Document 1: Schlosser U.S. Patent No. 5,388,866
Document 2: Worthing U.S. Patent No. 5,215,336

E. DETAILED DISCUSSION

Provided next is a detailed discussion which points out, with the particularity required by 37 CFR §1.111(b) and (c), how the claimed subject matter is patentable over the cited references.

The present invention is in the field of fluid coupling assemblies, for example, associated with aircraft engines wherein a jet engine must have an extended period of service with a high reliability associated with removable coupling joint assemblies for connecting various fluid lines to the engine.

As can be appreciated, an inadvertent release of a coupling assembly in such an environment prevents the destruction of not only the aircraft, but literally hundreds of lives on commercial carriers. Balanced against the safety requirement is also the necessity to remove and replace engines for the aircraft and to enable a verification of the coupling at a predetermined torque force. Additionally, since there are frequently a large number of coupling assemblies

required, it is highly desirable to provide lightweight fastening components to form the locking assembly. The present invention provides an improvement in this field to respond to these design requirements.

The fluid coupling assembly of the present invention comprises a first member connected to a first fluid conduit and having a first sealing surface that can provide a series of raised serrations that can be axially aligned. A first fastening configuration such as threads can interact with a second fastening configuration on a second member for connection to a second fluid conduit having a second sealing surface to engage the first sealing surface.

The second member has a plurality of axially cantilevered beams, each beam having at least one tooth of a configuration to engage the serrations. The operative engagement of the tooth and serrations can enable a relatively low force rotation during a sealing engagement and a relatively higher force resistance to rotation during any disengagement. The cantilevered beams can support one or more teeth at a distal end so that upon assembling, the initial engagement of the teeth will be with the entrance to the raised serrations and at the final sealing engagement, the teeth will remain in contact with the axially aligned surfaces of the serrations.

The plurality of axially aligned cantilevered beams are spaced to enable a visual conformation of the engagement of the teeth and serrations by a user capable of viewing the coupling assembly.

The PCT Written Opinion contended that the *Schlosser* (U.S. Patent No. 5,388,866) anticipated Claims 1-18 of the present invention. More specifically, the Office Action referred to the embodiment of Figures 13-15 for anticipating the present claims.

The *Schlosser* '866 patent was a continuation of an earlier U.S. Patent No. 5,058,930. The embodiments of Figures 13-15 are to provide an additional feature in the previously

disclosed embodiments having an annular groove for receiving cantilevered tips. The basic design is to employ a thin wall barrel with short slots so that there is an interference fit when the barrel is assembled to press against the ramp. See Column 3, Lines 32-52. A lubricant can be provided on the ramp as it urges the combination of threads together resulting from the resistance of a designed interference between the barrel and the ramp when forced together.

As noted in Column 8, Lines 63-65, the ramp 90 on the male coupling member "constitutes an important feature of the invention." Additionally, the bulbous tips on the cantilevered fingered structure of the female nut are designed to slide across the fustro-conical surface of the ramp and drop into the recessed or annular groove of the male member.

As noted in Column 10, Line 55 through Column 11, Line 4, the interaction between the ramp, the bulbous tip and subsequently the cantilevered fingers or cylindrical barrel embodiment, has an important feature of providing a constant force as a result of the interaction with the ramp to maintain the helical threads in a tightly engaged relationship, thereby to avoid play between the threads. Additionally, another feature of the radially extending parts from the cantilevered fingers or cylindrical barrel, is to drop in and engage in a recess to lock the respective fitting members together to thereby minimize or avoid a separation of the coupling parts.

The embodiment of Figure 13 described in Column 13 starting at Line 19, discloses a tubular section including a separate auxiliary section 294 to engage in a recess 292 to form a composite female part. A polygonal shaped part 294 functions to support the force generating member 296 which is a barrel provided with the radially extending part 298 to be accommodated in an annular recess 300.

It is believed the variation of Figure 14 was relied upon in the Written Opinion wherein the annular recess is provided with a groove which includes teeth and notches therebetween.

Thus, the '866 patent discloses in Figure 14, a modification in the male coupling member to have a shallow tooth groove as defined in Column 13, Line 60 through Column 14, Line 4 as follows:

As will be shown, the aforesaid notches are parallel to the axis of symmetry of the fitting. As will also appear hereinafter, the second members including a cylindrical barrel including an end portion provided with parallel slots. The end portion thereby includes axially aligned cantilever fingers between the slots, these fingers including radially extending parts. These parts are received in the notches to restrict relative rotation between the first and second members. The parallel slots in the barrel are of a relatively shallow depth and it is principally the barrel which engages the ramp with the radially extending parts at the same time being located in the notches.

As can be seen, the parallel slots in the barrel of a relatively shallow depth to encourage the hoop stress and the principal feature is the barrel engaging the ramp.

Immediately following this disclosure in Column 14, Lines 8-39, is a description of both the formula and the dimensions associated with designing the barrel for the engagement with the ramp to provide the "tube type stress in the barrel."

Referring to Figure 14, the teeth appear to be rectangular projections having rectangular notches 328 between the respective teeth. Referring to Figure 15, serrations are defined as radially inwardly extending members for engaging the teeth. The serrations are purportedly to restrict relative rotation when engaging the teeth. There is no discussion of a particular configuration of the teeth and serrations to teach a relative higher force resistance to rotation during disengagement from the initial force rotation for engagement of the teeth and the serrations. These features are set forth in our independent Claims 1 and 11.

Additionally, the prime teaching of the *Schlosser* '866 patent is the feature of the barrel particularly engaging the ramp with only relatively shallow depth parallel slots in the barrel. See Column 14, Lines 1-7. The radially inwardly extending tips in Figures 14 and 15 are the

serrations, while the teeth are recessed in a groove. The serrations in our structure are radially projecting outward for engagement with teeth at the distal ends of annularly spaced axial cantilevered beams. The axially spaced cantilevered beams are further spaced to position the respective distal ends sufficiently apart to enable a visual confirmation of engagement of the alignment of a tooth and the annular serrations. These features are set forth in Claims 1 and 16.

Additionally, as disclosed in Figure 2, the initial contact between the cantilevered beams and the final operative engagement contact with the teeth and serrations is maintained directly between an entrance of the teeth into the serrations and its contact with the axially aligned surface of the serrations at the final sealing point. Thus, the plurality of teeth and serrations remain in contact with each other and a predetermined sealing force is reached between the first member and the second member. These features are set forth in independent Claims 11 and 16.

These features are neither taught nor rendered obvious by the *Schlosser* '866 patent.

The International Search Report also cited applicant's prior U.S. Patent No. 5,215,336 (*Worthing*). This coupling joint assembly taught a coupling member having a female receptacle with a pair of circular projections formed on a collar member. There is no teaching of annularly spaced axial cantilevered beams positioned with notches or gaps sufficient to enable visual confirmation of engagement of the alignment of a tooth and annular serrations. The encircling collar is disclosed with opposite extending pawls or projections. Thus, this disclosure also fails to teach the above claim elements as defined in our presently outstanding claims and dependent claims therefrom.

In view of the above comments, it is believed that applicant has met the conditions for a Petition to Make Special.

If a telephone phone call would assist in the prosecution of this matter, the undersigned attorney can be contacted at the listed phone number.

I hereby certify that this correspondence is being deposited with the United States Postal Service as Express Mail in an envelope addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on August 24, 2006.

By: Sharon Farnus



Signature

Dated: August 24, 2006

Very truly yours,

SNELL & WILMER L.L.P.



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